Customer No.:31561
Application No.: 10/707,683
Docket No.: 11846-US-PA

REMARKS

Present Status of Application

The Office Action mailed December 15, 2005 rejected all presently-pending claims 1-5. Claims 1-3 and 5 are rejected under U.S.C. 102(e) as being anticipated by, or in the alternative under U.S.C. 103(a) as being unpatentable over Fukuda et al. US Patent Application Publication 2003/0183946. In view of the following discussions, a notice of allowance is respectfully solicited.

Discussion for 35 U.S.C. 102 and 103 rejections

Applicants respectfully traverse the rejection of claims 1-5 under 103(a) as being unpatentable over Fukuda et al. (2003/0183946) because a prima facie case of obviousness has not been established by the Office Action.

To establish a prima facie case of obviousness under 35 U.S.C. 103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element in the claims. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skilled in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of the three requirements must "be found in the prior art, and not be based on applicant's disclosure." See M.P.E.P. 2143, 8th ed., February 2003.

In claim 1 of the present invention, "the encapsulating material layer between the chip and the carrier has a first thickness and the encapsulating material layer on the chip has a second thickness such that the second thickness is between 0.5 ~ 2 times the first thickness". Fukuda discloses that "In this semiconductor device shown in FIG. 2, the height of the space between the substrate 1 and the semiconductor chip 4 is 0.055 mm or less, and the thickness of the semiconductor chip 4 is 0.25 mm or less. Further, the thickness of the portion of encapsulating resin layer 5 opposite to the substrate is 0.15 mm or less. In this case, the thickness of the portion of encapsulating resin layer 5 disposed over the semiconductor chip 4 is 0.15 mm or less. These dimensions are confined as mentioned above in order to minimize the thickness as a whole of the semiconductor device." in paragraph [0035]. However, while the first thickness (the height of the space between the substrate 1 and the semiconductor chip 4) is 0.055 mm and the second thickness (the thickness of the portion of encapsulating resin layer 5 opposite to the substrate) is 0.15 mm, the second thickness is about 2.73 times the first thickness. That is, the relation between the first thickness and the second thickness disclosed by Fukuda in paragraph [0035] is not within the range disclosed in claim 1 of the present invention.

Since Fukuda fail to teach or suggest that the second thickness should be restricted within 0.5 ~ 2 times the first thickness, the differences between claim 1 of the present invention and the Fukuda would not have been obvious at the time the invention was made to a person having ordinary skill in the art.

In claim 2 of the present invention, "maximum diameter of particles constituting

the encapsulating material layer is smaller than 0.5 times the first thickness". Fukuda discloses that "the inorganic filler to be incorporated into the molding resin composition employed in the embodiments of the present invention is confined to have the following features: (1) The longest diameter thereof is 35 μm or less; ...The content of fine filler having the longest diameter of 10μm or less is confined within the range of 30 to 50% by weight ..." in paragraphs [0050]-[0053]. However, while the first thickness (the height of the space between the substrate 1 and the semiconductor chip 4) is 0.055 mm and the maximum diameter of particles constituting the encapsulating material layer (the longest diameter of the inorganic filler to be incorporated into the molding resin composition) is 35 μm, the maximum diameter of particles constituting the encapsulating material layer is about 0.64 times the first thickness. That is, maximum diameter of particles constituting the encapsulating material layer is not smaller than 0.5 times the first thickness disclosed by Fukuda in paragraph [0035] and is not identical to claim 2 of the present invention.

Since Fukuda fail to teach or suggest that the maximum diameter of particles constituting the encapsulating material layer should be smaller than 0.5 times the first thickness, the differences between claim 2 of the present invention and the Fukuda would not have been obvious at the time the invention was made to a person having ordinary skill in the art.

Applicants respectfully submit that, as disclosed above, independent claim 1 and dependent claim 2 patently define over the prior art reference, and should be allowed. For at least the same reasons, dependent claims 3-5 patently define over the prior art as a

matter of law, for at least the reason that these dependent claims contain all features of their respective independent claim.

Withdrawal of these rejections under 35 USC 102 (e) and 103(a) is respectfully requested.

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CONCLUSION

In view of the foregoing, it is believed that all pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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